

CO - 3 WAY PNEUMATIC VALVE

INSTRUCTION MANUAL 2080




*Engineering
GREAT Solutions*

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STI S.r.l. has taken every care in collecting and verifying the documentation contained in this Instruction Manual. The information herein contained are reserved property of STI S.r.l.

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1 GENERAL INFORMATION

1.1 General Warnings

| | |
|---|---|
| Important  | This Instruction Manual is an integral part of the machine, it should be carefully read before carrying out any operation and it should be kept for future references. The operators shall adopt the safety precautions required by the country where the product is installed. This Instruction Manual is realized in accordance with the Directive 2006/42/CE. |
|---|---|

1.2 Generalities

STI S.r.l. actuators are conceived, manufactured and controlled according to the Quality management System in compliance with EN ISO 9001 International Standard.

1.3 Manufacturer

With respect to Machinery Directive 2006/42/EC, the Manufacturer of the described CO 3 way pneumatic valve is STI S.r.l. as specified on the label.

STI S.r.l. Via Dei Caravaggi 15
24040 Levate (BG) Italy
Tel. +39 035 2928.2
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1.4 Terms and conditions

STI S.r.l. guarantees each single product to be free from defects and to conform to current goods specifications. The warranty period is two years from the date of shipment to the first user. The warranty does not cover special products or components not covered by warranty in their turn by subcontractors. No warranty is given for products which have been subject to improper storage, improper installation, improper maintenance or which have been modified or repaired by unauthorised personnel.

1.5 Manufacturer's liability

The CO 3 way pneumatic valve is designed in accordance with the applicable International Rules and Specifications, but the following regulations must be observed in any case:

- the general and safety regulations;
- the plant specific regulations and requirements;
- the proper use of personal devices, protective devices (glasses, clothing, gloves, etc), tools and transport equipment.

STI S.r.l. declines all liability in the event of:

- use CO 3 way pneumatic valve in other applications than the designated ones;
- use of the CO 3 way pneumatic valve in contravention of local safety at work legislation;

- lack of care during transport, installation, operations, maintenances of the CO 3 way pneumatic valve or incorrect application of the instructions provided on the CO 3 way pneumatic valve label and in this manual;
- modifications or repairs without STI S.r.l. authorisation;
- work done on the unit by unqualified or unsuitable operators.

Considering that STI S.r.l. has no direct control over particular applications, operation or maintenance conditions, it is the operator's responsibility to comply with all applicable safety rules; it is the sole responsibility of the operator to ensure that the local health and safety regulations are adhered to. Depending on the specific working conditions, additional precautions may be requested.

Please inform STI S.r.l. urgently if you face unsafe situations not described in this Instruction Manual.

1.6 Applicable Standards and Directives

| | |
|-------------------|---|
| EN ISO 12100:2010 | Safety of machinery - General principles for design - Risk assessment and risk reduction |
| IEC 61508:2010 | Functional safety of electrical / electronic / programmable electronic safety-related systems |
| 2006/42/EC | Machinery Directive |
| 2014/68/UE | Pressure Equipments Directive (PED) |
| 2014/34/UE | Equipments used in potentially explosive atmospheres (ATEX) |

1.7 Symbology used

1.7.1 Signs of warning

Be careful where these symbols are shown, they indicate a potentially hazardous situation and they warn that if the steps are not properly performed, MAY RESULT CAUSING serious injury, death or long-term risks to the health of exposed persons.



GENERAL DANGER



DANGER POWER SUPPLY



CRUSHING HAZARD

1.7.2 Signs of obligation



General obligation (with the possible supplementary signboard)



Must wear protective clothing.



Must wear protective footwear.



Must wear protective helmet.



Must wear protective glasses



Must wear earplugs

2 DEVICE DESCRIPTION

2.1 General Description

The CO 3 way pneumatic valve exists in different sizes, up to 2". Each CO 3 way pneumatic valve is made by a body containing a shutter able to connect different pneumatic ways depending on the pilot signal (port P): in the CO 3 way pneumatic valve size ½" and 1" there are n°2 shutters, in the CO 3 way pneumatic valve size 1" ½ and 2" there is n°1 shutter.

If the pressure of the pilot signal is greater than the minimum value (P_{min} in Section 3), the CO 3 way pneumatic valve is "energized" and the generated thrust compress the spring inside the CO, thus the port S (supply) is directly connected to the actuator through the port U (users).

In the other case, If the pilot signal pressure is less than the minimum value P_{min} , the CO 3 way pneumatic valve is "de-energized" and the spring move the shaft inside the CO, thus the connected ways are the port U (users) and the port E (exhaust).

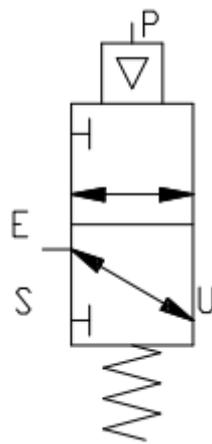


Figure 1 – CO 3 way pneumatic valve symbol (de-energize)

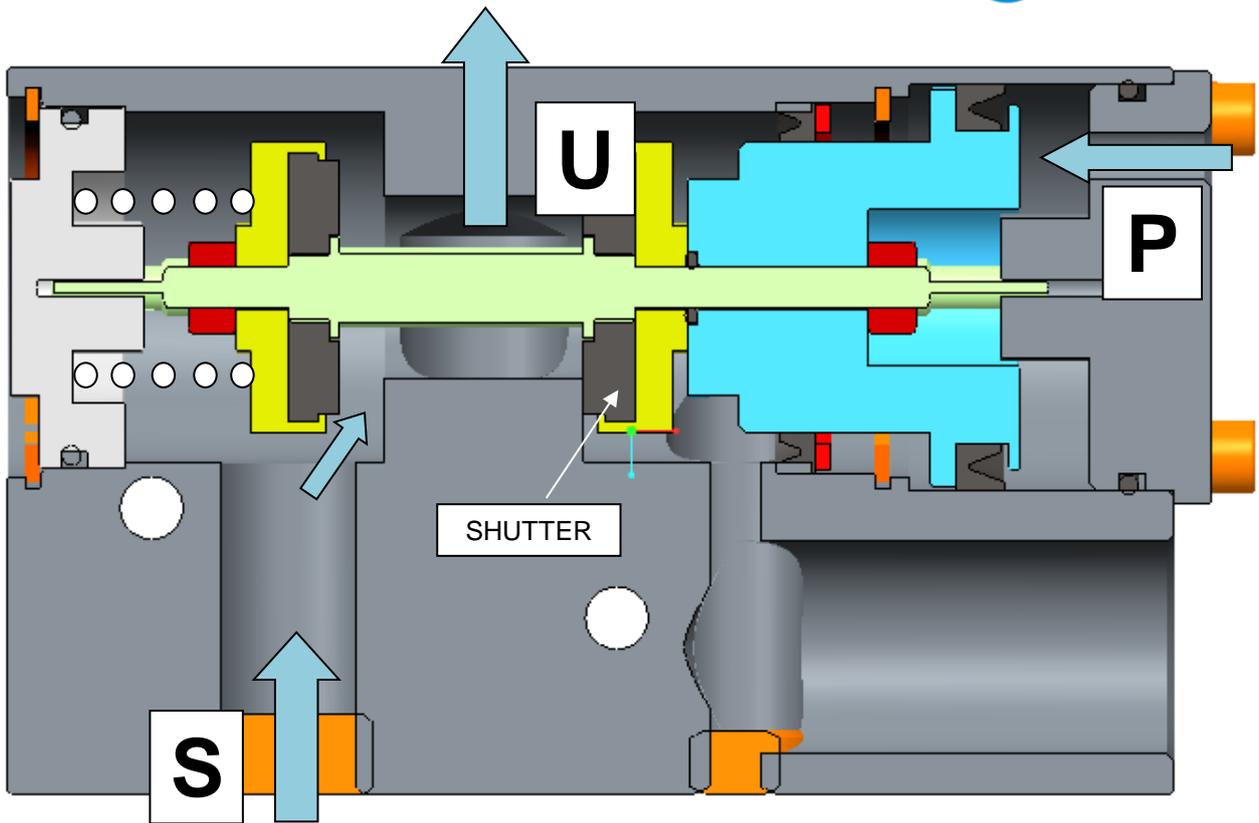


Figure 2 – CO 3 way pneumatic valve size 1": energized

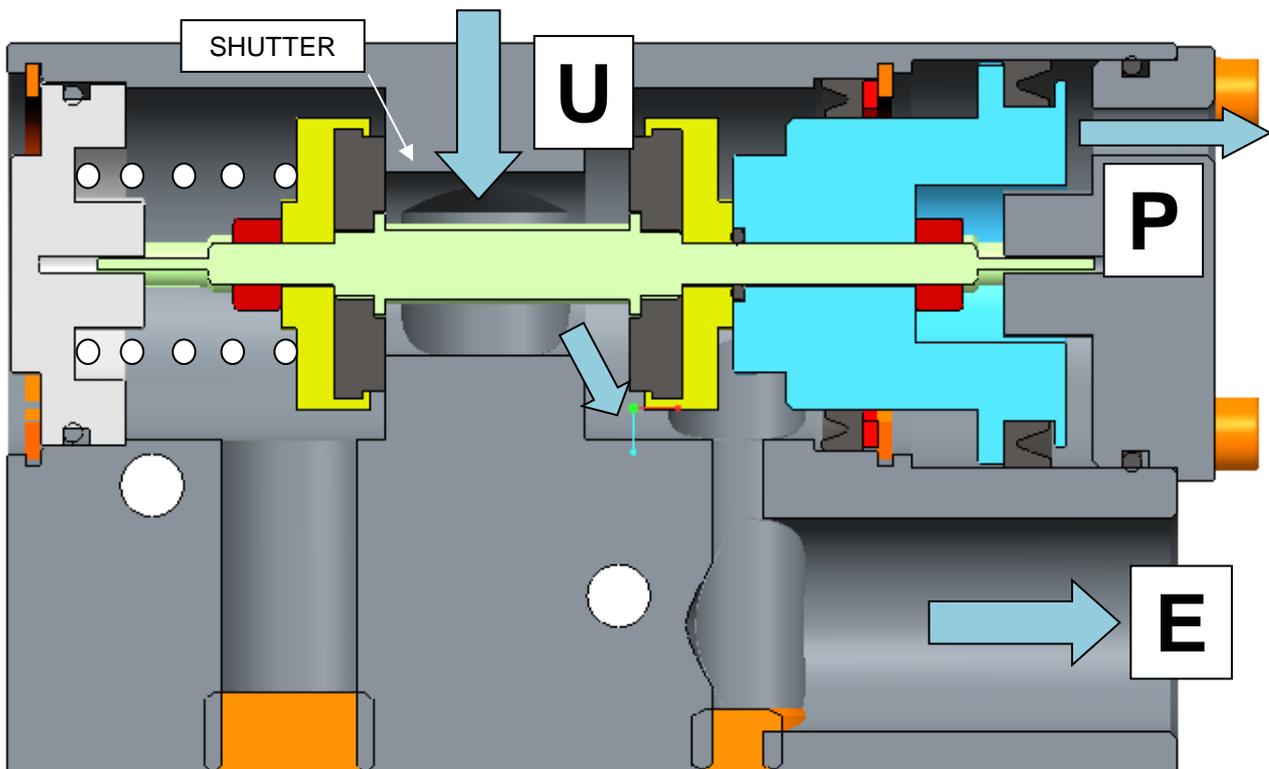


Figure 3 – CO 3 way pneumatic valve size 1": de-energized

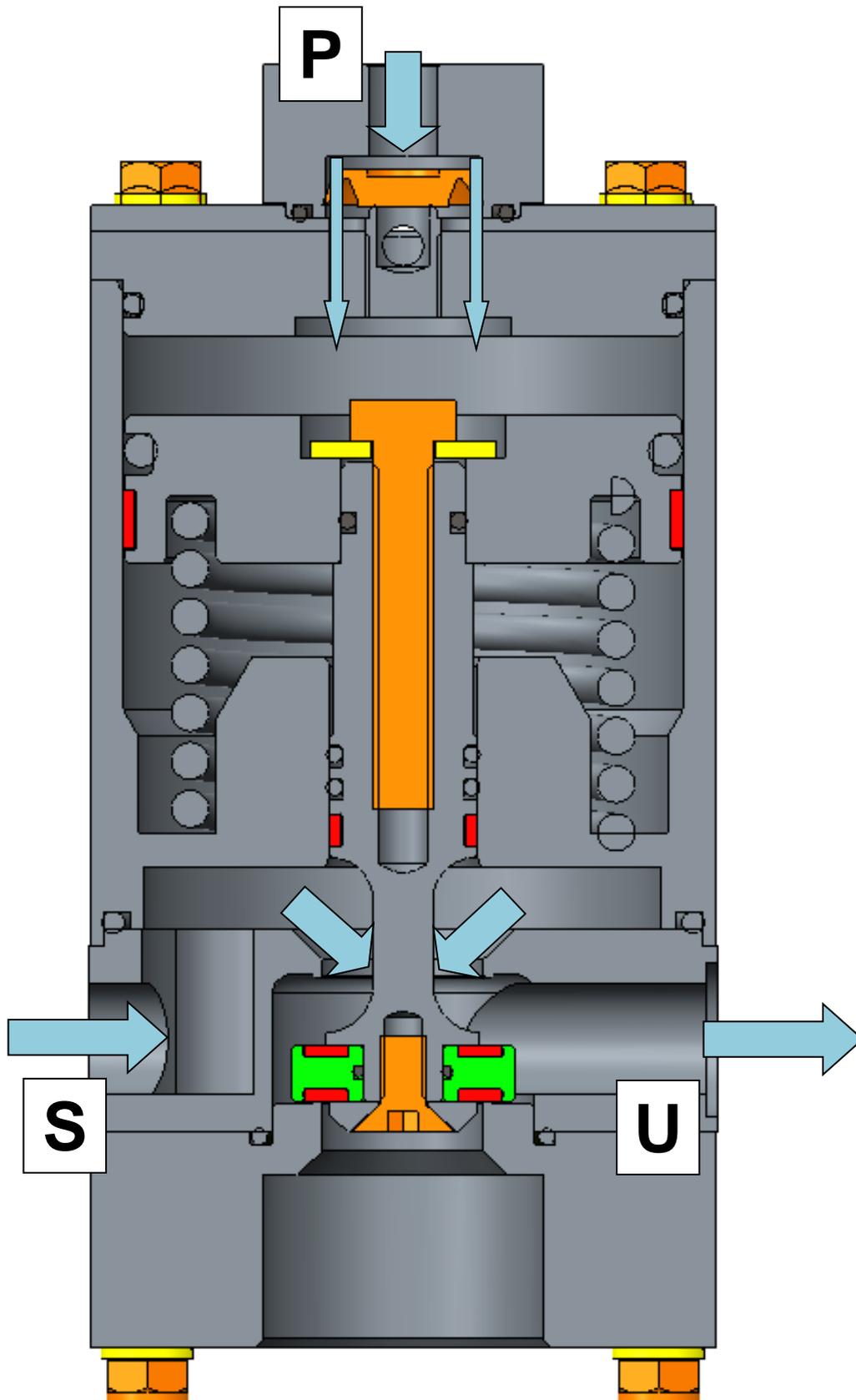


Figure 4 – CO 3 way pneumatic valve size 1" ½ : energized

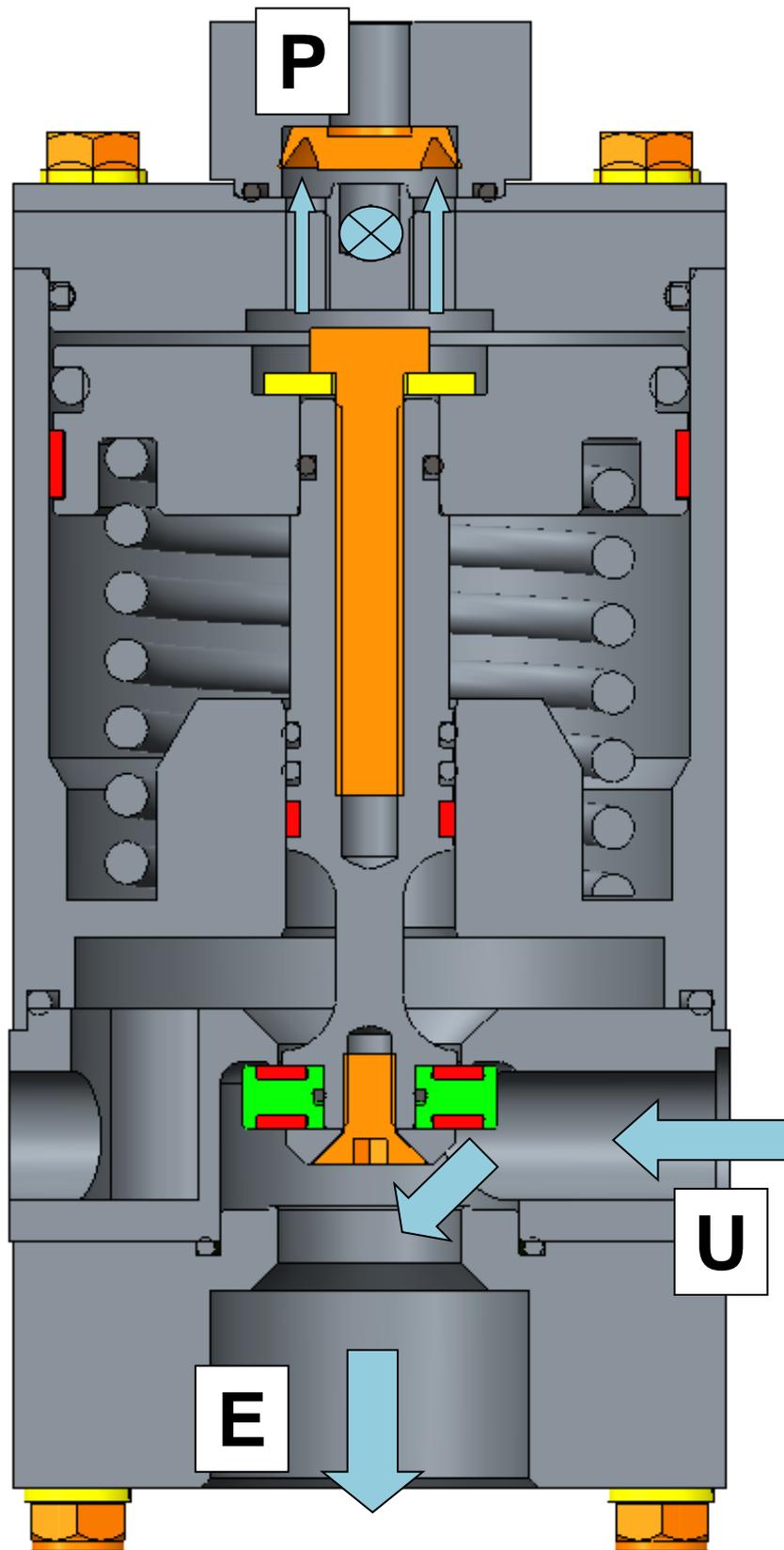


Figure 5 – CO 3 way pneumatic valve size 1" ½ : de-energized

3 TECHNICAL DATA

| | CO ¼ ” | CO ½ ” | CO 1 ” | CO 1” ½ | CO 2 ” |
|------------------------------------|----------------------------|--|---------------------------------|---------------------------------|---------------------------------|
| Material | Anodized aluminum | Anodized aluminum | Anodized aluminum | Painted aluminum | Painted aluminum |
| | Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| Operating pressure | P _{min} = 2.5 bar | P _{min} = 2.5 bar | P _{min} = 2.5 bar | P _{min} = 2.5 bar | P _{min} = 2.5 bar |
| | P _{max} = 10 bar | P _{max} = 10 bar | P _{max} = 10 bar | P _{max} = 10 bar | P _{max} = 10 bar |
| Standard operating temperature (*) | T _{min} = -20 °C | T _{min} = -20 °C | T _{min} = -20 °C | T _{min} = -20 °C | T _{min} = -20 °C |
| | T _{max} = +70 °C | T _{max} = +70 °C | T _{max} = +70 °C | T _{max} = +70 °C | T _{max} = +70 °C |
| Storage temperature | T _{min} = -40 °C | T _{min} = -40 °C | T _{min} = -40 °C | T _{min} = -40 °C | T _{min} = -40 °C |
| | T _{max} = +80°C | T _{max} = +80°C | T _{max} = +80°C | T _{max} = +80°C | T _{max} = +80°C |
| Port size | Pilot signal: 1/8” | Pilot signal: 1/8” | Pilot signal: 1/8” | Pilot signal: 1/4” | Pilot signal: 1/4” |
| | Others: 1/4” | Others: 1/2” / Manifold mounting | Others: Manifold mounting | Others: Manifold mounting | Others: Manifold mounting |
| Expected lifetime | 20 years | 20 years | 20 years | 20 years | 20 years |

(*) For some special application the operating temperature range could be another one included in the extended temperature range from -40°C to 100°C.

4 LABEL

The plate fastened on the CO contains the main operating conditions. The supply can be instrument air or natural gas. It is forbidden to modify the information and the marks without previous written authorization by STI S.r.l.



Figure 6 – CO standard label

| | |
|---|---|
| <p>Warning</p>  | <p>It is severely forbidden to use the CO 3 way pneumatic valve under conditions other than those provided on the label.</p> |
| <p>Important</p>  | <p>It is forbidden to modify the information and the marks without previous written authorization by STI S.r.l. Do not remove the label and/or replace with other label.</p> |

5 INSTALLATION

| | |
|---|---|
| Warning  | <p>The following instructions must be respected:</p> <ul style="list-style-type: none"> - operations must be carried out only by skilled operators; - always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
|---|---|

| | |
|---|---|
| Important  | <p>Not performing the following procedures will invalidate the product warranty.</p> |
|---|---|

5.1 Transport

| | |
|--|---|
| Important  | <p>The lifting and handling should be made by qualified staff and in compliance with the laws and provisions in force.</p> |
|--|---|

5.2 Reception

It is recommended to check the CO 3 way pneumatic valve conditions before the installation, then:

- prepare the necessary tools for the assembly and setting of the unit;
- check that the CO 3 way pneumatic valve size meet the specified dimensions;
- clean the CO 3 way pneumatic valve surfaces and remove anything that might prevent a perfect adherence with the actuator or other accessories.

5.3 Storage

Three-way pneumatic valve CO leaves the factory in perfect conditions. Performances of each unit are guaranteed by tests and data reported on the specific. To maintain these conditions until the CO is installed on site, proper attention must be observed for preservation during the storage period.

If the CO needs storage, before installation follow these steps:

- place it on a wood surface pallet or on metallic support, thus it is not in direct contact with the ground, and packed with appropriate covering;
- make sure that plastic plugs are present on the pneumatic connections;
- keep the CO protected from direct weather conditions;
- if stored outdoor, replace plastic plugs on pneumatic connections with metal plugs that guarantee perfect tightness.

5.4 Requirements of Stability

Concerning the requirement of stability during installation and disassembling, it is possible to refer to the next chapters 5.6 and 5.7.

5.5 Documents and dimensional drawings

Pneumatic diagrams, wiring diagrams and dimensional drawings are furnished with document accompanying the actuator.

5.6 Installation

| | |
|---|--|
| Warning  | <p>Before proceeding with any Installation, the following instructions must be respected:</p> <ul style="list-style-type: none"> - Always wear protective clothing, gloves, and eyewear to prevent personal injury; - Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
|---|--|

5.6.1 Checks to be performed before installation

- Check that the coupling dimensions meet the specified coupling dimensions.
- Prepare the necessary tools for the assembly and setting of the unit.
- Check that the outer surface of the BR is free from dust and dirt.
- Clean the BR surfaces and remove anything that might prevent a correct installation.

| | |
|--|---|
| Warning  | <p>Check if the CO 3 way pneumatic valve has a properly earthing connection.</p> |
|--|---|

The earthing connection is guaranteed through the fixing screws of the CO 3 way pneumatic valve. If the earthing connection of the system where CO 3 way pneumatic valve is mounted is not guaranteed, it is required to ensure a directly earthing connection from the screws.

| | |
|---|--|
| Warning  | <p>Check that the values of pneumatic supply available are compatible with those reported on the label of the CO 3 way pneumatic valve: a pressure regulator is absolutely necessary when supply pressure is higher than max operating pressure.</p> <p>User must consider and take all precautions to avoid that pressurized parts are not used out of specified range and to avoid exposure to fire.</p> |
|---|--|

| | |
|---|---|
| Important  | <p>For easier maintenance, it is recommended to install a filter with five micron cartridge and shut-off valve on the supply connection.</p> |
|---|---|

It is required to follow this steps during the pneumatic connection:

- no lubricators on supply fluid line is required;
- use pipes and connections appropriate as for type, rating, material and dimensions;
- properly deburr the ends of rigid pipes;
- properly clean the interior of pipes sending through them plenty of the supply fluid;
- use pipe sealant sparingly and only on male threads. A non-hardening sealant is strongly recommended;
- fasten the connection pipes so that no irregular strains or loosening of threaded connections occur;
- make the pneumatic connections according to the pneumatic diagram;

- check the absence of leakages from pneumatic connections. If necessary tighten the nuts of the pipe-fittings;
- after connecting the CO 3 way pneumatic valve, gradually increase the supply pressure up to the maximum operating pressure.

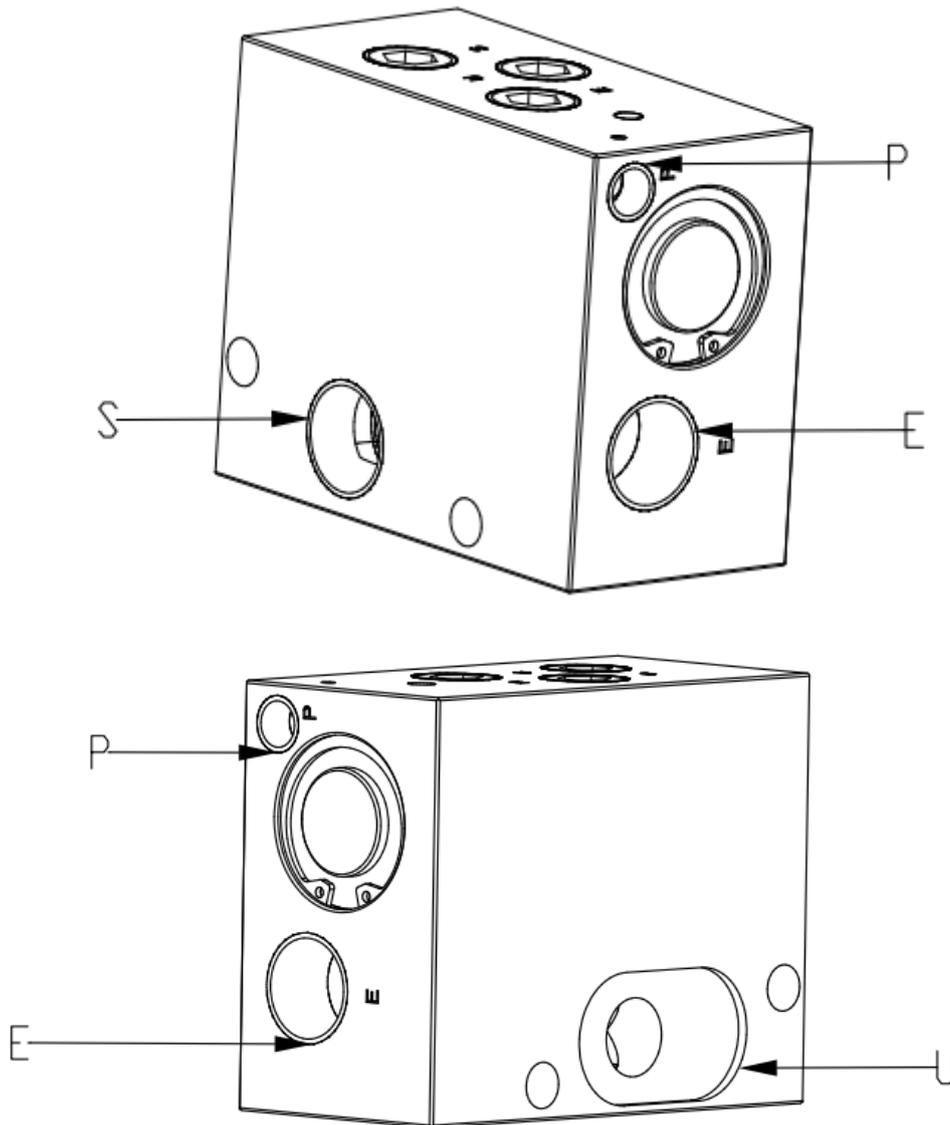


Figure 8 – CO 3 way pneumatic valve size ½"

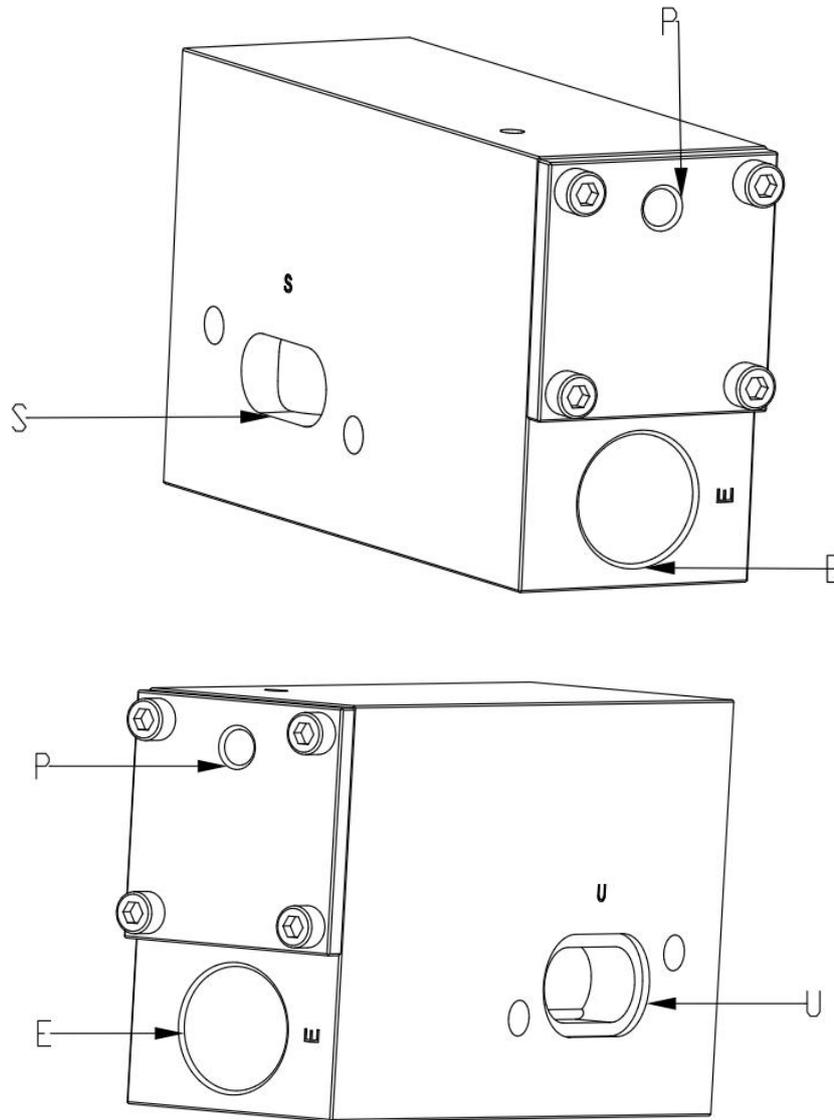


Figure 9 – CO 3 way pneumatic valve size 1”

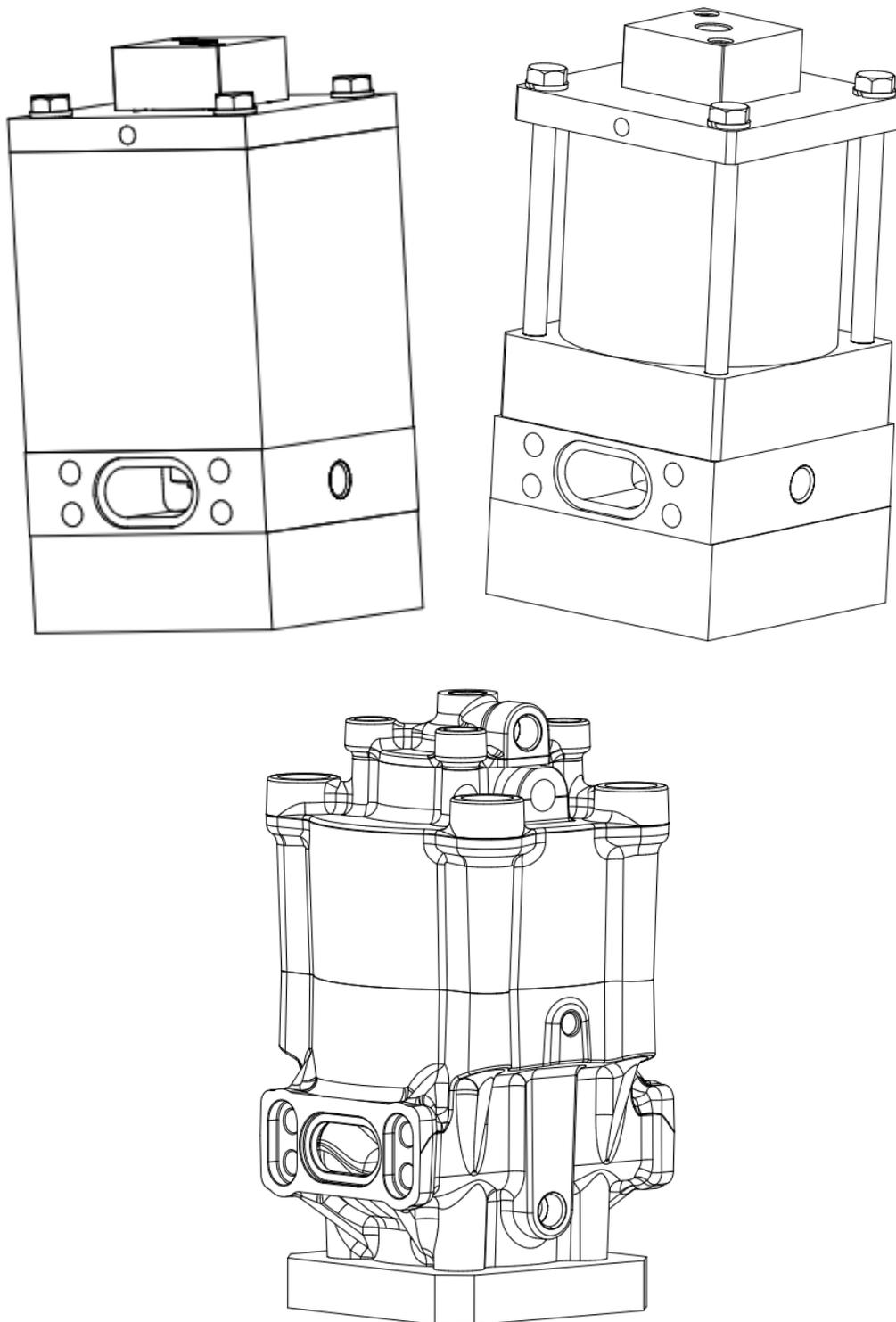


Figure 10 – CO 3 way pneumatic valve size 1" ½ (see Section 12 for details about pneumatic connection)

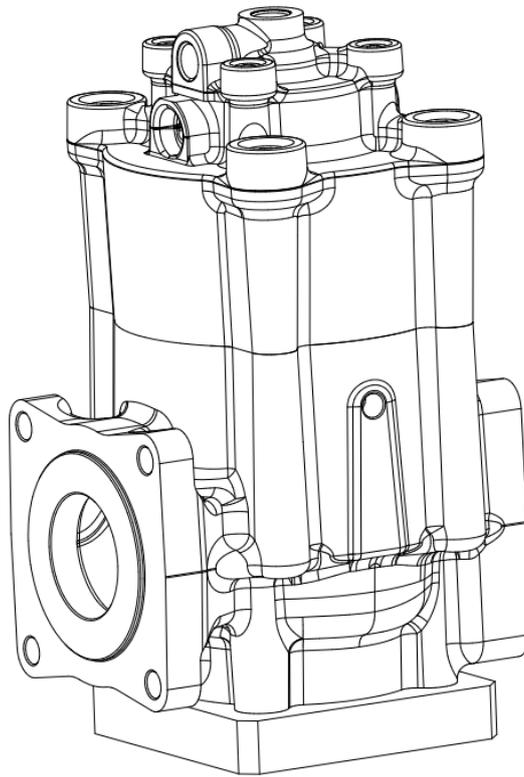


Figure 11 – CO 3 way pneumatic valve size 2" (see Section12 for details about pneumatic connection)

6 OPERATION AND USE

Warning



It is severely forbidden to use the CO 3 way pneumatic valve for purpose or application other than those for which it was designed and here specified.

6.1 Operating conditions

The label fastened on the CO 3 way pneumatic valve contains the main operating conditions for the specified application (see Section 4). Other operating conditions are reported in the documents accompanying the actuator. For general operating conditions see Section 3.

6.2 Intended use

The CO 3 way pneumatic valve are designed for high flow applications and need a signal pilot in order to change its status (2 possible positions). The CO 3 way pneumatic valve can be use in one or more synchronous units piloted by a pneumatic pressure switch in order to achieve the function of a lock up device.

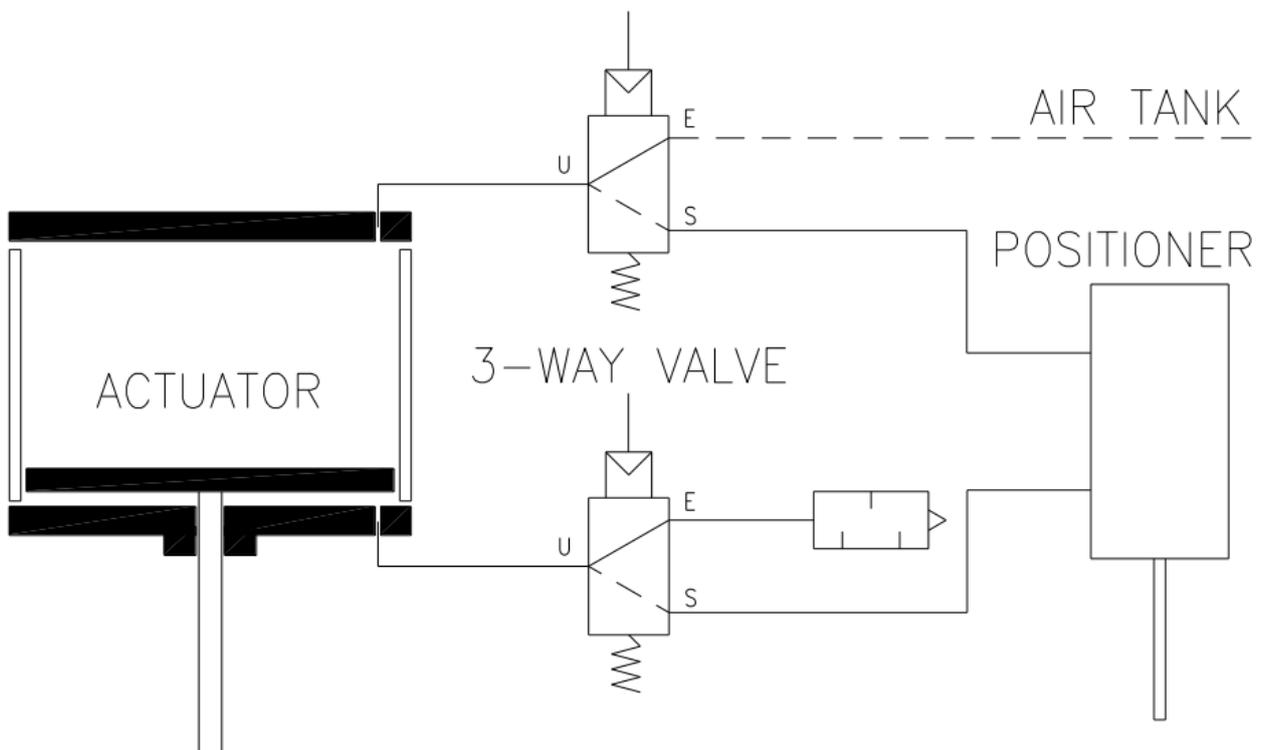


Figure 7 – Pneumatic circuit with n°2 CO 3 way pneumatic valves

7 TRANSPORT

| | |
|---|--|
| <p>Warning</p>  | <p>The following instructions must be respected:</p> <ul style="list-style-type: none">- operations must be carried out only by skilled operators;- always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
|---|--|

| | |
|---|--|
| <p>Important</p>  | <p>The lifting and handling should be made in compliance with the laws and provisions in force.</p> |
|---|--|

8 RECEPTION

CO 3 way pneumatic valve leave the factory in perfect condition. At the reception of the CO 3 way pneumatic valve:

- check that the model correspond with that of order confirmation;
- check that the CO 3 way pneumatic valve was not damaged during transportation. If necessary renovate the painting according to the specification reported on the order confirmation.

9 STORAGE

In order to maintain the guaranteed actuator performances until the CO 3 way pneumatic valve is installed on site, proper attention must be observed for preservation during the storage period. If the CO 3 way pneumatic valve needs storage before installation:

- place it in a dry, clean place and take all necessary measures to avoid contact with dust, dirt and humidity during storage;
- protect the CO 3 way pneumatic valve from weather conditions;
- make sure that connection protections and/or the mechanical locks will not be removed during the storage (for long-term storage replace the plastic plugs with metal plugs);
- storage temperature must be between -40°C and +80°C.

10 INSTRUCTION FOR THE OPERATORS

| | |
|---|---|
| <p>Warning</p>  | <p>Preloaded spring inside.</p> |
| <p>Warning</p>  | <p>The following instructions must be respected:</p> <ul style="list-style-type: none"> - operations must be carried out only by skilled operators; - always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
| <p>Important</p>  | <p>Any repair work other than the operations outlines in this Instruction Manual is allowed only if STI S.r.l. authorises it.</p> |

10.1 Field activities

During the start-up of the CO 3 way pneumatic valve:

- check that the pressure and quality of the supply fluid (filtering degree, dehydration, etcetera) are as prescribed;
- check if the operating condition are as prescribed;
- check that there are no leak of the pneumatic connections;
- check that there are no leak of the CO 3 way pneumatic valve body;
- remove all rust on the CO 3 way pneumatic valve surfaces;
- repair paint-coat that has been damaged, in accordance with the applicable painting specifications;
- perform a complete functional test.

10.2 Residual Risks

Reasonably foreseeable misuse:

- risk due to movements of loads during transport and installation;
- crushing during transport and installation;
- installation in ambient with not planned conditions;
- metal temperature at high or very low values as consequence of ambient temperature as to be considered as a risk of person injury in case of contact;
- insert incorrect motive fluid into the system;
- supply pressure out of planned range;
- emissions of hazardous substances where dangerous gases are used as motive fluid.

11 MAINTENANCE

| | |
|---|--|
| <p>Warning</p>  | <p>The following instructions must be respected:</p> <ul style="list-style-type: none">- operations must be carried out only by skilled operators (STI operators or operators qualified by STI are recommended);- always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
|---|--|

Before any type of operation and/or maintenance is performed, make sure that:

- actuator, accessories and all connected equipment are not under pressure and in safe conditions;
- fluid supply, power or other energy sources and signals are disconnected;
- actuator is free from any mechanism able to move.

11.1 Periodic Inspections and maintenance

Periodic visual inspections are recommended. The user shall:

- plan and provide for a periodic cleaning/maintenance program that will maintain the external surface of the CO 3 way pneumatic valve free from excessive layer of dust;

11.2 Extraordinary maintenance

In case of extraordinary maintenance, following malfunction and related troubleshooting, proceed as written in Section 13.

12 PARTS LIST GENERAL ASSEMBLY

12.1 CO 1/2"

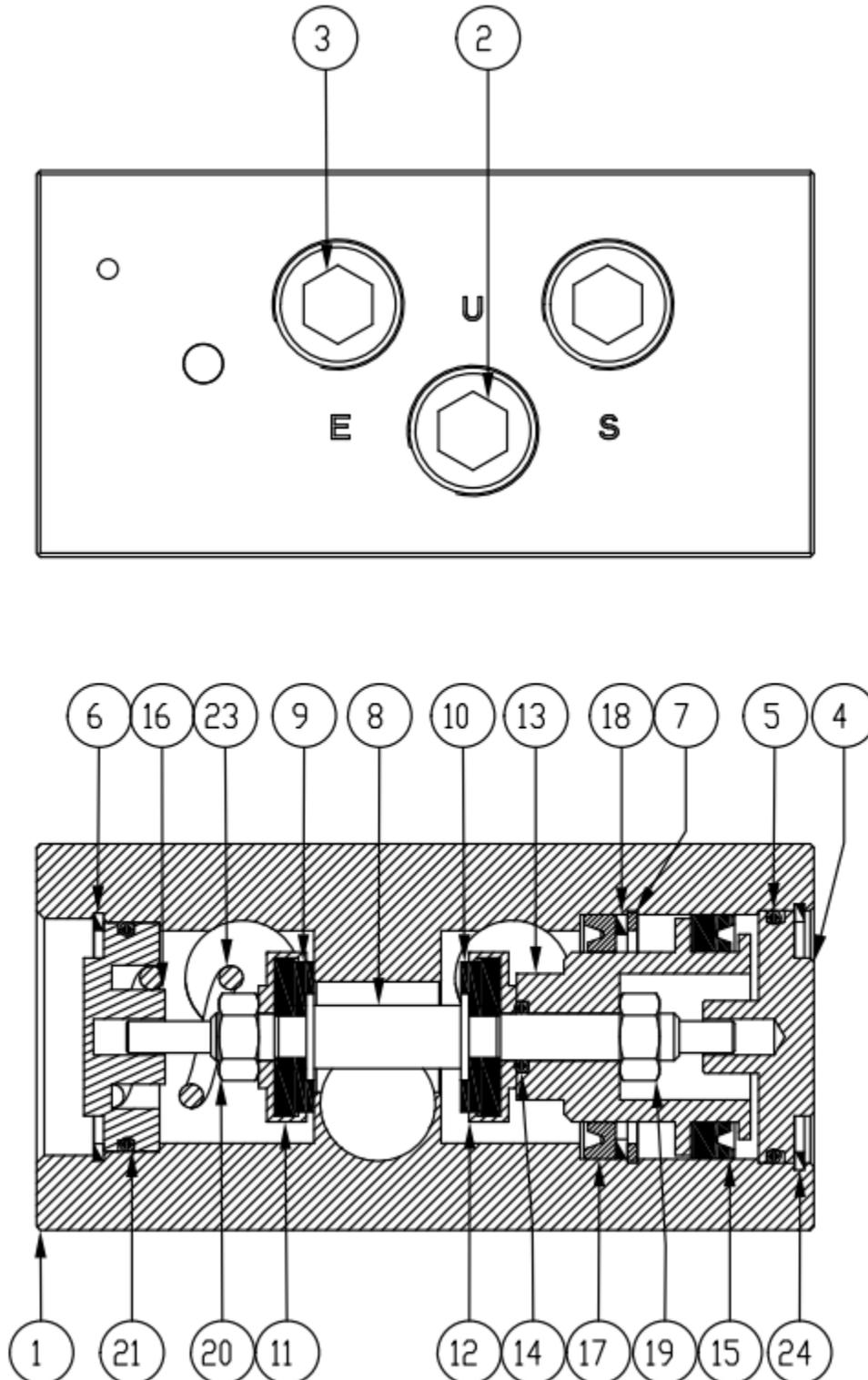


Figure 12 – CO 3 way pneumatic valve size 1/2": aluminum machining or stainless steel machining

| PDS. | Q.TY' | DESCRIPTION |
|------|-------|---------------|
| 1 | 1 | BODY |
| 2 | 2 | PLUG |
| 3 | 1 | PLUG |
| 4 | 1 | PILOT FLANGE |
| 5 | 1 | SEALING RING |
| 6 | 1 | STOP RING |
| 7 | 1 | STOP RING |
| 8 | 1 | STEM |
| 9 | 1 | GASKET |
| 10 | 1 | GASKET |
| 11 | 1 | SHUTTER BODY |
| 12 | 1 | SHUTTER BODY |
| 13 | 1 | CURSOR |
| 14 | 1 | SEALING RING |
| 15 | 1 | SEALING |
| 16 | 1 | SPRING FLANGE |
| 17 | 1 | SEALING |
| 18 | 1 | RING |
| 19 | 1 | NORMAL NUT |
| 20 | 1 | NORMAL NUT |
| 21 | 1 | SEALING RING |
| 23 | 1 | SPRING |
| 24 | 1 | STOP RING |

Figure 13 – CO 3 way pneumatic valve size ½": aluminum machining or stainless steel machining

12.2 CO 1"

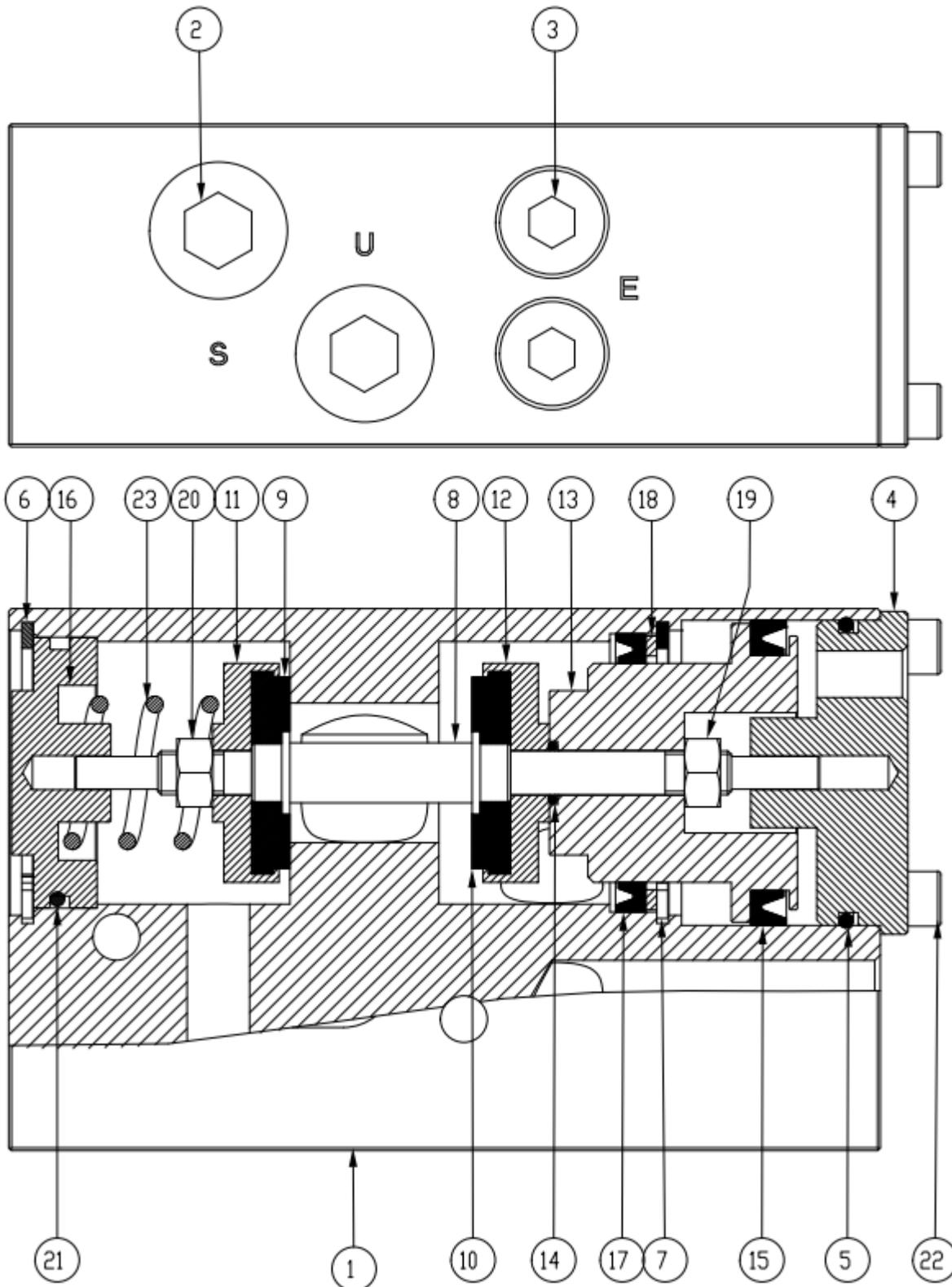


Figure 14 – CO 3 way pneumatic valve size 1": aluminum machining or stainless steel machining

| POS. | Q.TA' | DESCRIZIONE |
|------|-------|---------------|
| 1 | 1 | BODY |
| 2 | 2 | PLUG |
| 3 | 2 | PLUG |
| 4 | 1 | PILOT FLANGE |
| 5 | 1 | SEALING RING |
| 6 | 1 | STOP RING |
| 7 | 1 | STOP RING |
| 8 | 1 | STEM |
| 9 | 1 | GASKET |
| 10 | 1 | GASKET |
| 11 | 1 | SHUTTER BODY |
| 12 | 1 | SHUTTER BODY |
| 13 | 1 | CURSOR |
| 14 | 1 | SEALING RING |
| 15 | 1 | SEALING |
| 16 | 1 | SPRING FLANGE |
| 17 | 1 | SEALING |
| 18 | 1 | RING |
| 19 | 1 | NUT |
| 20 | 1 | NUT |
| 21 | 1 | SEALING RING |
| 22 | 4 | SCREW |
| 23 | 1 | SPRING |

Figure 15 – CO 3 way pneumatic valve size 1": aluminum machining or stainless steel machining

12.3 CO 1" ½

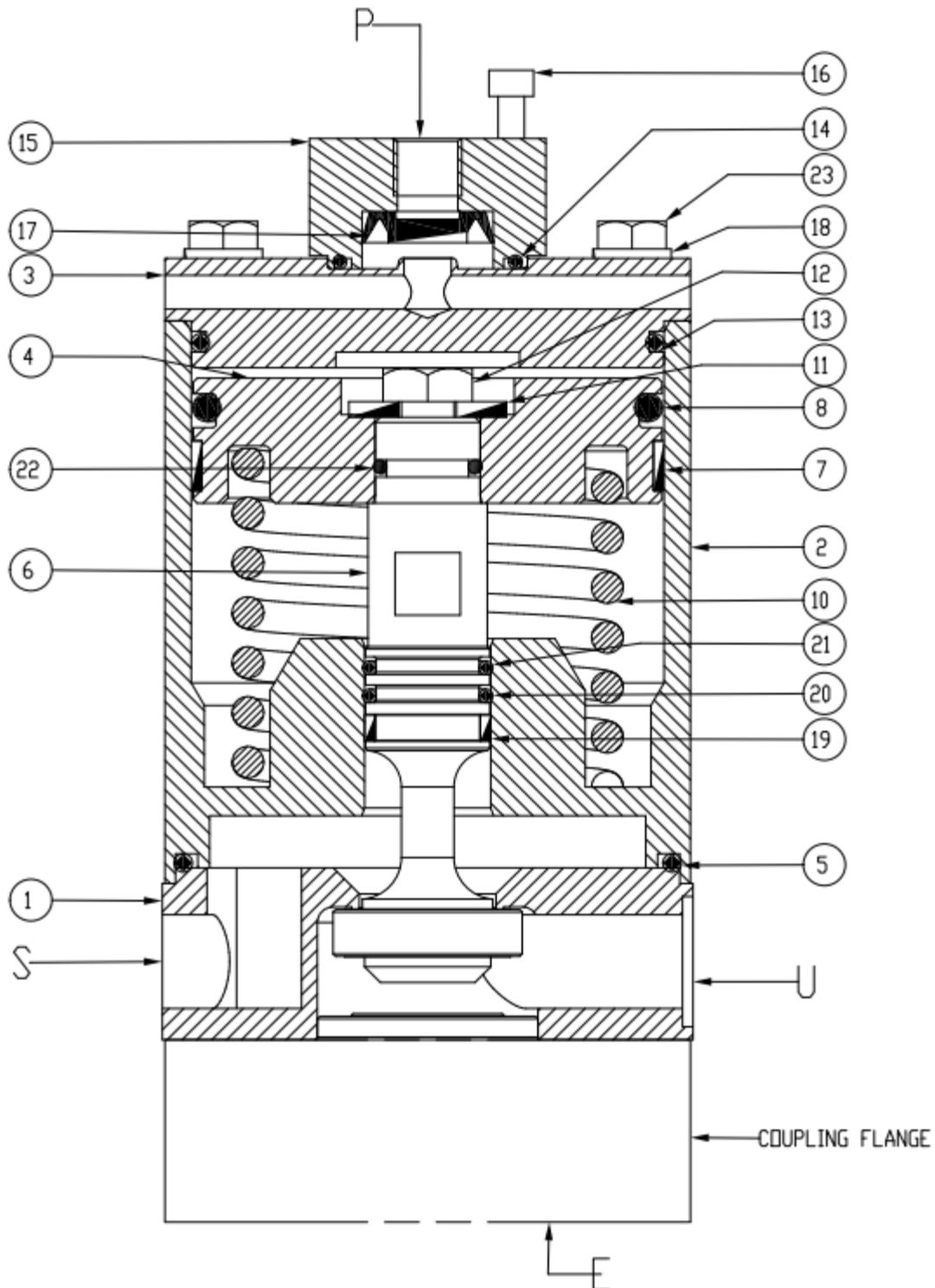


Figure 16 – CO 3 way pneumatic valve size 1" ½: aluminum machining

| POS. | Q.TY' | DESCRIPTION |
|------|-------|---------------------|
| 1 | 1 | BODY |
| 2 | 1 | UPPER BODY |
| 3 | 1 | UPPER COVER |
| 4 | 1 | PISTON |
| 5 | 1 | SEALING RING |
| 6 | 1 | SPOOL ASSEMBLY |
| 7 | 1 | SLIDING RING PISTON |
| 8 | 1 | SEALING RING |
| 10 | 1 | SPRING |
| 11 | 1 | FLAT WASHER |
| 12 | 1 | SCREW |
| 13 | 1 | SEALING RING |
| 14 | 1 | SEALING RING |
| 15 | 1 | PILOT CAP |
| 16 | 2 | SCREW |
| 17 | 1 | DIAPHRAGM PLUGGER |
| 18 | 4 | LOCK WASHER |
| 19 | 1 | SLIDING RING |
| 20 | 1 | SEALING RING |
| 21 | 1 | SEALING RING |
| 22 | 1 | SEALING RING |
| 23 | 4 | SCREW |

Figure 17 – CO 3 way pneumatic valve size 1" ½: aluminum machining

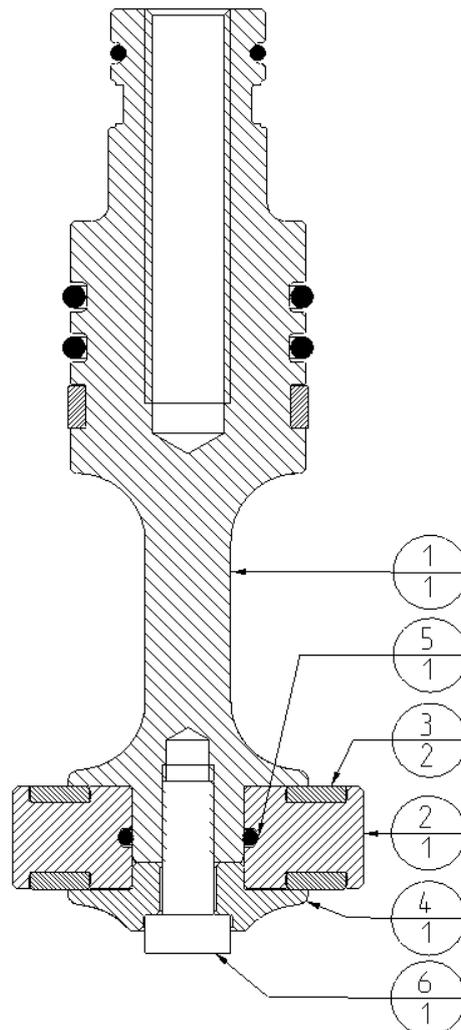


Figure 18 – Spool assembly CO 3 way pneumatic valve size 1" ½: aluminum machining

| POS. | Q.TY | DESCRIPTION |
|------|------|----------------------|
| 1 | 1 | SPOOL |
| 2 | 1 | SPOOL WASHER |
| 3 | 2 | GASKET |
| 4 | 1 | WASHER CLOSING SPOOL |
| 5 | 1 | SEALING RING OR |
| 6 | 1 | SCREW TCEI |

Figure 19 – Spool assembly CO 3 way pneumatic valve size 1" ½: aluminum machining

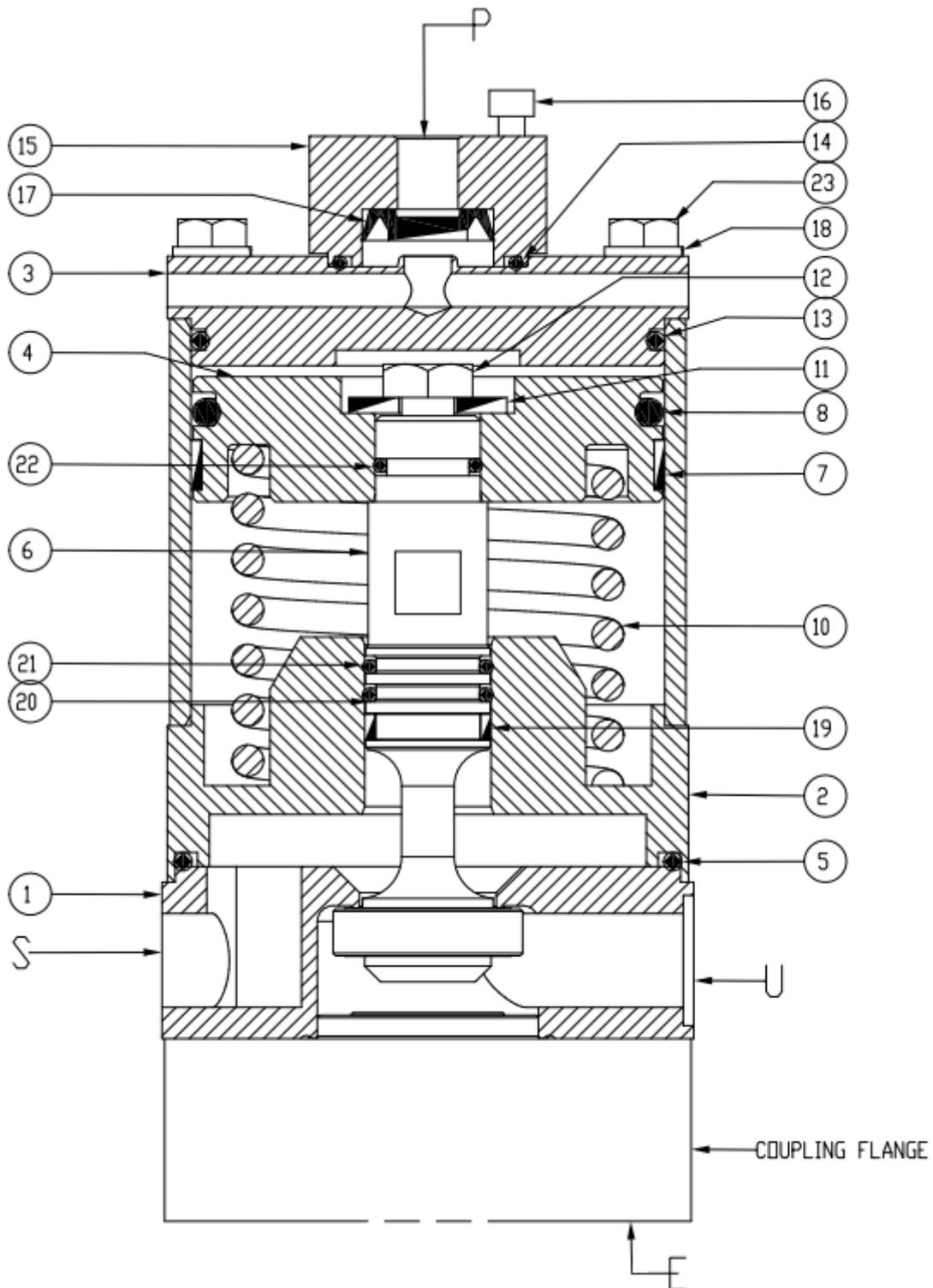


Figure 20 – CO 3 way pneumatic valve size 1" ½: stainless steel machining

| PDS. | Q.TY' | DESCRIPTION |
|------|-------|---------------------|
| 1 | 1 | BODY |
| 2 | 1 | UPPER BODY ASSEMBLY |
| 3 | 1 | UPPER COVER |
| 4 | 1 | PISTON |
| 5 | 1 | SEALING RING |
| 6 | 1 | SPOOL ASSEMBLY |
| 7 | 1 | SLIDING RING PISTON |
| 8 | 1 | SEALING RING |
| 10 | 1 | SPRING |
| 11 | 1 | FLAT WASHER |
| 12 | 1 | SCREW |
| 13 | 1 | SEALING RING |
| 14 | 1 | SEALING RING |
| 15 | 1 | PILOT CAP |
| 16 | 2 | SCREW |
| 17 | 1 | DIAPHRAGM PLUGGER |
| 18 | 4 | LOCK WASHER |
| 19 | 1 | SLIDING RING |
| 20 | 1 | SEALING RING |
| 21 | 1 | SEALING RING |
| 22 | 1 | SEALING RING |
| 23 | 4 | SCREW |

Figure 21 – CO 3 way pneumatic valve size 1" ½: stainless steel machining

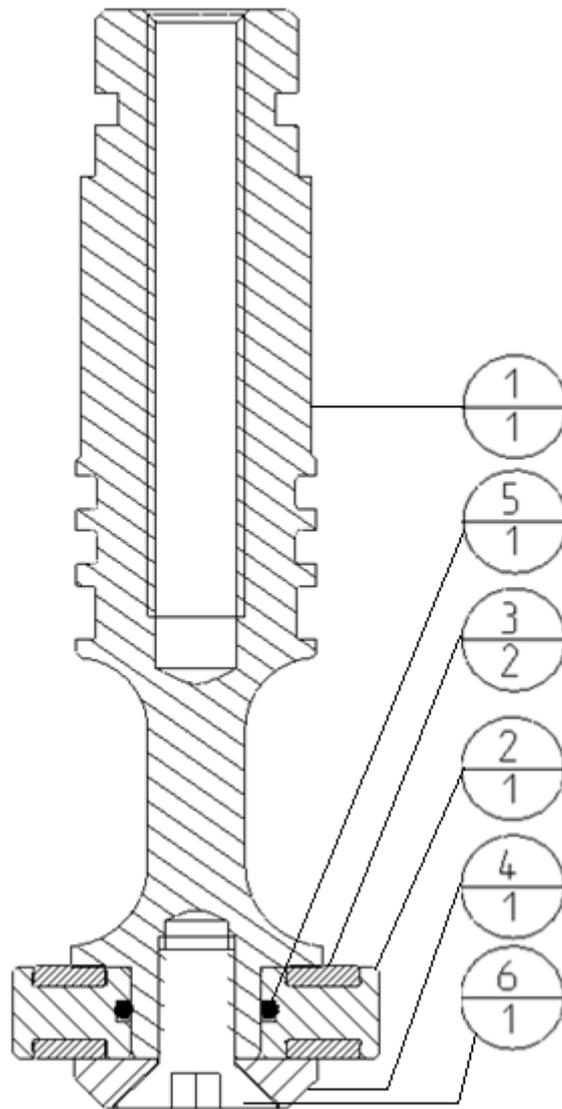


Figure 22 – Spool assembly CO 3 way pneumatic valve size 1" ½: stainless steel machining

| POS. | Q.TY | DESCRIPTION |
|------|------|----------------------|
| 1 | 1 | SPOOL |
| 2 | 1 | SPOOL WASHER |
| 3 | 2 | GASKET |
| 4 | 1 | WASHER CLOSING SPOOL |
| 5 | 1 | SEALING RING OR |
| 6 | 1 | SCREW TCEI |

Figure 23 – Spool assembly CO 3 way pneumatic valve size 1" ½: stainless steel machining

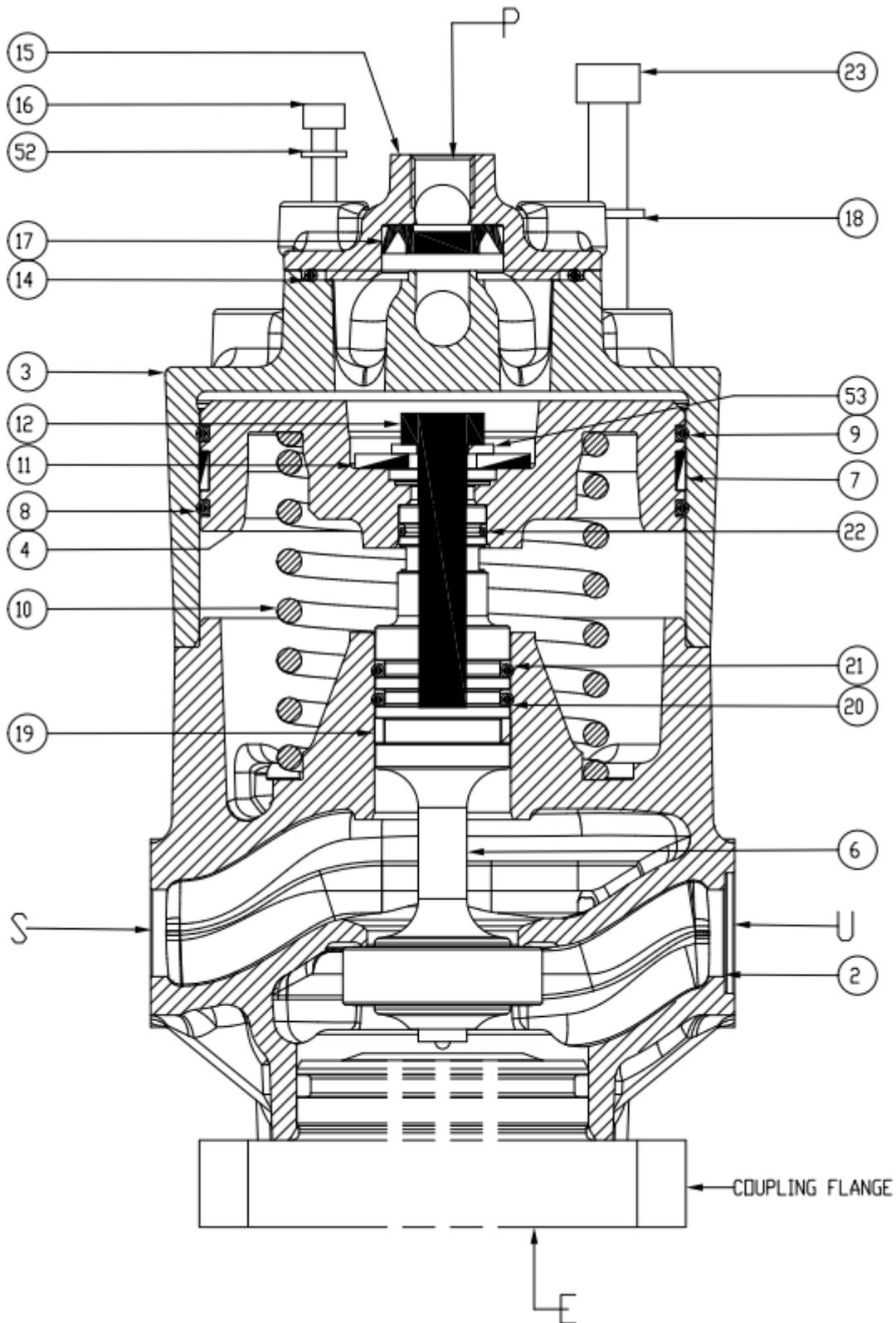


Figure 24 – CO 3 way pneumatic valve size 1" 1/2: stainless steel casting

| POS. | Q.TY' | DESCRIPTION |
|------|-------|-------------------|
| 2 | 1 | BODY |
| 3 | 1 | UPPER COUPLING |
| 4 | 1 | CO2 PISTON |
| 6 | 1 | SPOOL ASSEMBLY |
| 7 | 1 | SLIDING RING |
| 8 | 1 | SEALING RING |
| 9 | 1 | SEALING RING |
| 10 | 1 | SPRING |
| 11 | 1 | FLAT WASHER |
| 12 | 1 | SCREW |
| 14 | 1 | SEALING RING |
| 15 | 1 | PILOT CAP |
| 16 | 4 | SCREW |
| 17 | 1 | DIAPHRAGM PLUGGER |
| 18 | 4 | LOCK WASHER |
| 19 | 1 | SLIDING RING |
| 20 | 1 | SEALING RING |
| 21 | 1 | SEALING RING |
| 22 | 1 | SEALING RING |
| 23 | 4 | SCREW |
| 52 | 4 | LOCK WASHER |
| 53 | 1 | FLAT WASHER |

Figure 25 – CO 3 way pneumatic valve size 1" ½: stainless steel casting

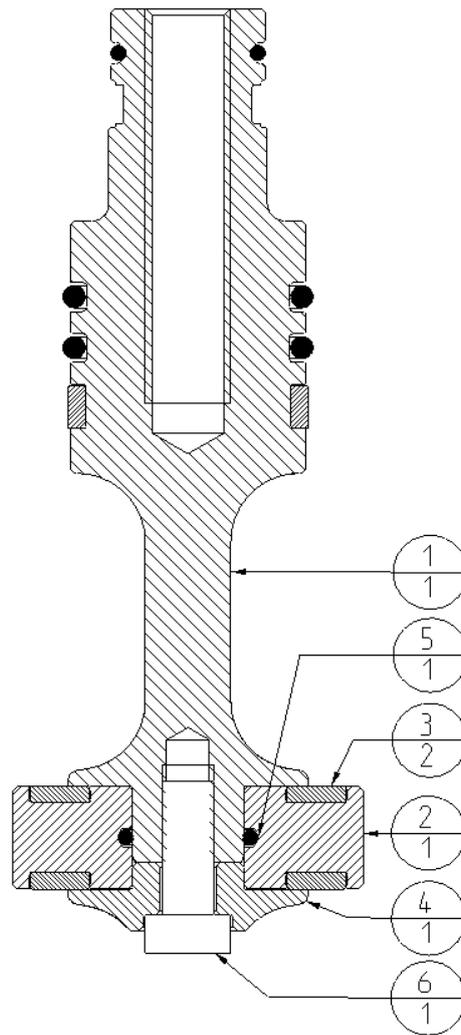


Figure 26 – Spool assembly CO 3 way pneumatic valve size 1" ½: stainless steel casting

| POS. | Q.TY | DESCRIPTION |
|------|------|----------------------|
| 1 | 1 | SPOOL |
| 2 | 1 | SPOOL WASHER |
| 3 | 2 | GASKET |
| 4 | 1 | WASHER CLOSING SPOOL |
| 5 | 1 | SEALING RING OR |
| 6 | 1 | SCREW TCEI |

Figure 27 – Spool assembly CO 3 way pneumatic valve size 1" ½: stainless steel casting

12.4 CO 2 ”

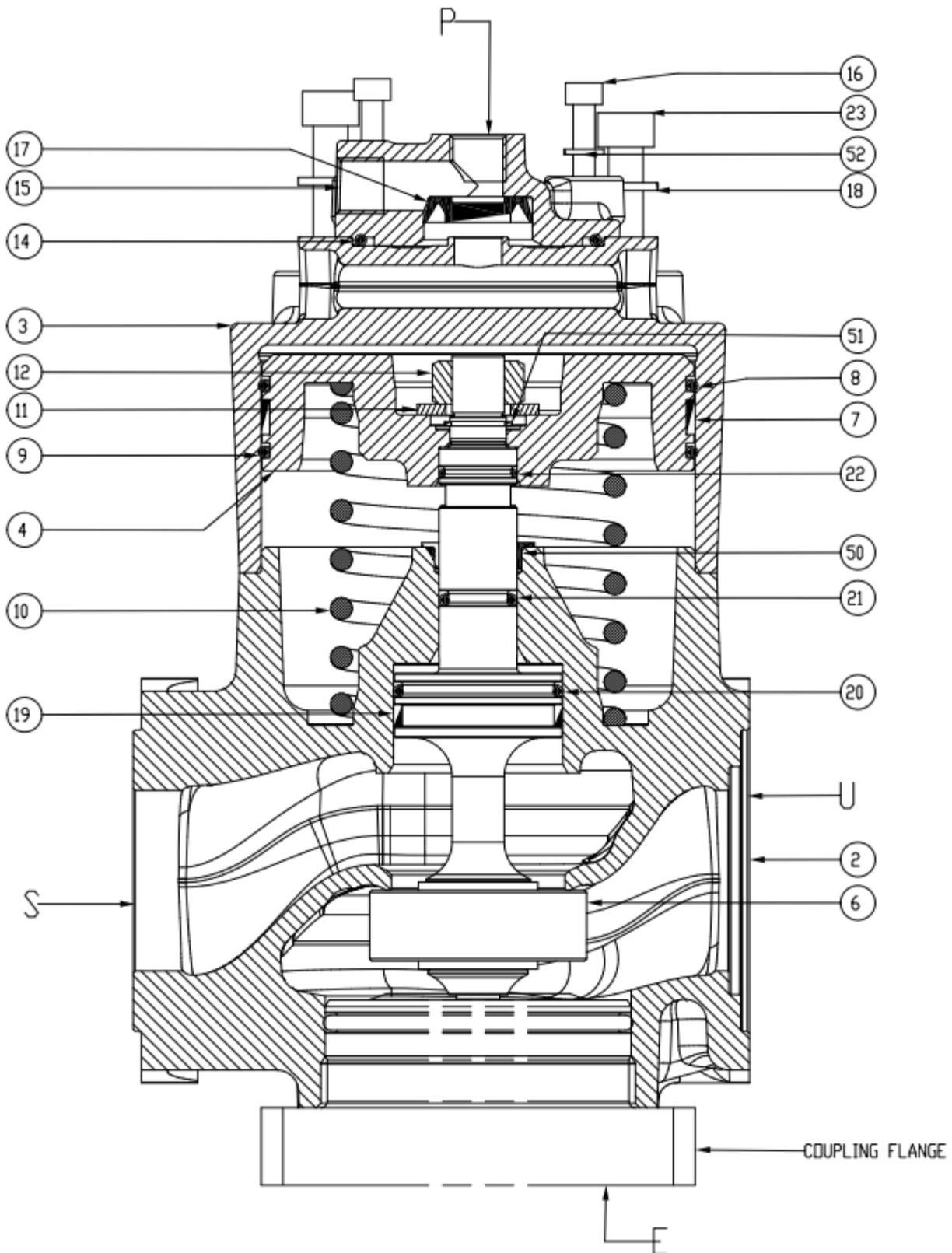


Figure 28 – CO 3 way pneumatic valve size 2": stainless steel casting or aluminum casting

| POS. | Q.TY' | DESCRIPTION |
|------|-------|-------------------|
| 2 | 1 | BODY |
| 3 | 1 | UPPER COUPLING |
| 4 | 1 | CO2 PISTON |
| 6 | 1 | SPOOL ASSEMBLY |
| 7 | 1 | SLIDING RING |
| 8 | 1 | SEALING RING |
| 9 | 1 | SEALING RING |
| 10 | 1 | SPRING |
| 11 | 1 | FLAT WASHER |
| 12 | 1 | NORMAL NUT |
| 14 | 1 | SEALING RING |
| 15 | 1 | PILOT CAP |
| 16 | 4 | SCREW |
| 17 | 1 | DIAPHRAGM PLUGGER |
| 18 | 4 | LOCK WASHER |
| 19 | 1 | SLIDING RING |
| 20 | 1 | SEALING RING |
| 21 | 1 | SEALING RING |
| 22 | 1 | SEALING RING |
| 23 | 4 | SCREW |
| 50 | 1 | FLANGE BEARING |
| 51 | 1 | STOP RING |
| 52 | 4 | LOCK WASHER |

Figure 29 – CO 3 way pneumatic valve size 2": stainless steel casting or aluminum casting

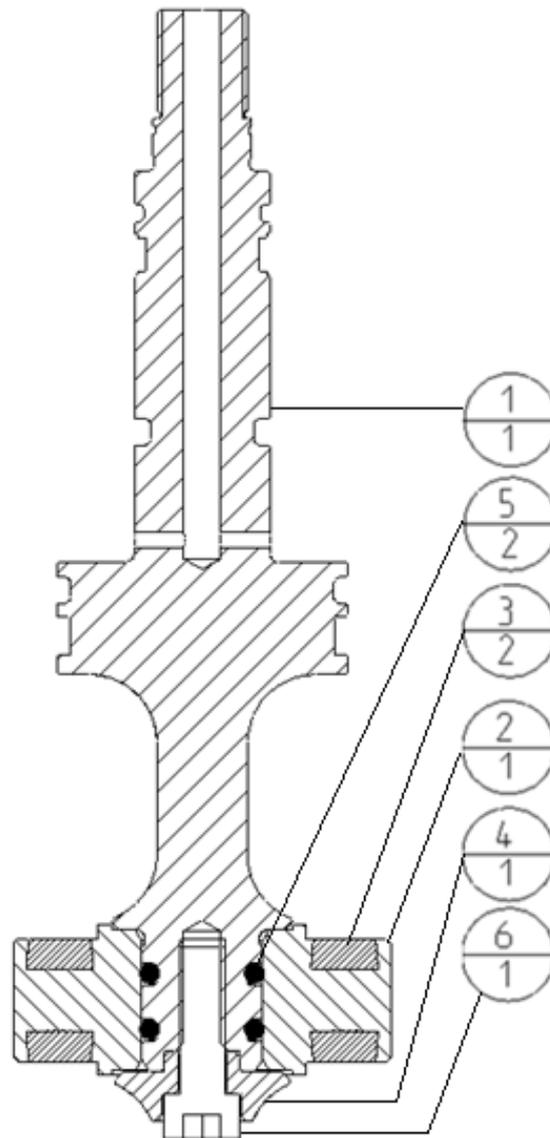


Figure 30 – Spool assembly CO 3 way pneumatic valve size 2": stainless steel casting or aluminum casting

| POS. | Q.TY | DESCRIPTION |
|------|------|----------------------|
| 1 | 1 | SPOOL |
| 2 | 1 | SPOOL WASHER |
| 3 | 2 | GASKET |
| 4 | 1 | WASHER CLOSING SPOOL |
| 5 | 2 | SEALING RING OR |
| 6 | 1 | SCREW TCEI |

Figure 31 – Spool assembly CO 3 way pneumatic valve size 2": stainless steel casting or aluminum casting

13 TROUBLESHOOTING

| EVENT | POSSIBLE CAUSE | REMEDY |
|--|---|-------------------------|
| CO 3 way pneumatic valve doesn't move | Lack of pneumatic supply | Check supply line |
| | Low supply pressure | Adjust supply pressure |
| | Pneumatic circuit failure | Check pneumatic circuit |
| | Damaged internal parts (spring, diaphragm, ecc..) | Call STI S.r.l. |
| Leakages from CO 3 way pneumatic valve | Deterioration and/or damage of gasket | Call STI S.r.l. |
| | Deterioration and/or damage of the parts with pressure inside | Call STI S.r.l. |
| | Incorrect screws tighten | Call STI S.r.l. |
| Leakages from pneumatic circuit | The nuts of pipe fittings are not tighten enough | Tighten the nuts |
| | Pneumatic circuit failure | Check pneumatic circuit |

| | |
|--|---|
| <p>Important</p>  | <p>If another event happens or another possible cause of the above events has been detected, call STI S.r.l.</p> |
|--|---|

14 SPARE PARTS

Spare parts can be sent to the customer if required. Contact STI S.r.l.

15 DISASSEMBLING

| | |
|---|--|
| <p>Important</p>  | <p>The disassembling is not allowed if it is not authorized by STI.</p> |
|---|--|

16 DECOMMISSIONING

| | |
|---|--|
| <p>Warning</p>  | <p>The following instructions must be respected:</p> <ul style="list-style-type: none"> - operations must be carried out only by skilled operators; - always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media. |
|---|--|

| | |
|---|--|
| <p>Important</p>  | <p>Check local authority regulation before disposal.</p> |
|---|--|

| SUBJECT | HAZARDOUS | RECYCABLE | DISPOSAL |
|-------------------------|-----------|-----------|--|
| Metals | No | Yes | Use licensed recyclers |
| Plastics | No | Yes | Use specialist recyclers |
| Rubber (seals, o-rings) | Yes | No | May require special treatment before disposal, use specialist waste disposal companies |
| Oil and grease | Yes | Yes | May require special treatment before disposal, use specialist waste disposal companies |

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